



Education

Jobs

Travel

Gifts

Home :: WMD :: Library :: Report :: Enviro :: Eis-0217 ::

WEAPONS OF MASS DESTRUCTION (WMD)









SAVANNAH RIVER SITE WASTE MANAGEMENT FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME I TABLE OF CONTENTS

FOREWORD

SUMMARY

- S.1 Introduction
- S.2 Background
- S.3 Purpose and Need for Agency Action
- S.4 Proposed Action
- S.5 Alternatives
- S.6 Affected Environment
- S.7 Environmental Consequences

CHAPTER 1. PURPOSE AND NEED FOR ACTION

REFERENCES

CHAPTER 2. DESCRIPTIONS OF THE ALTERNATIVES

- 2.1 Waste Forecasts
- 2.1.1 WASTE DESCRIPTIONS
- 2.1.2 TReaTABILITY GROUPS
- 2.1.2.1 Radiological Properties
- 2.1.2.2 Physical and Chemical Characteristics
- 2.1.2.3 Hazardous Constituents
- 2.1.3 EXPECTED WASTE FORECAST
- 2.1.3.1 SRS Operations and Offsite Waste Receipts
- 2.1.3.2 Decontamination and Decommissioning
- 2.1.3.3 Environmental Restoration
- 2.1.4 MINIMUM WASTE FORECAST
- 2.1.4.1 SRS Operations and Offsite Waste Receipts
- 2.1.4.2 Decontamination and Decommissioning
- 2.1.4.3 Environmental Restoration
- 2.1.5 MAXIMUM WASTE FORECAST

- 2.1.5.1 SRS Operations and Offsite Waste Receipts
- 2.1.5.2 Decontamination and Decommissioning
- 2.1.5.3 Environmental Restoration
- 2.2 No-Action Alternative
- 2.2.1 POLLUTION PREVENTION/WASTE MINIMIZATION
- 2.2.1.1 Introduction
- 2.2.1.2 Annual Reductions in the Generation of Waste
- 2.2.1.3 Waste Minimization Goals
- 2.2.1.4 Waste Minimization Practices and Initiatives
- 2.2.1.4.1 Source Reduction
- 2.2.1.4.2 Recycling
- 2.2.2 HIGH-LEVEL WASTE
- 2.2.2.1 Continue Receiving and Storing of Liquid High-Level Waste in the F- and H-Area Tank Farms
- 2.2.2.2 Waste Removal
- 2.2.2.3 Continue Operating Existing High-Level Waste Evaporators
- 2.2.2.4 Continue Operating the F/H-Area Effluent Treatment Facility
- 2.2.2.5 Continue Constructing and Begin Operating the Replacement High-Level Waste Evaporator
- 2.2.2.6 Complete Construction and Begin Operating the New Waste Transfer Facility
- 2.2.3 LOW-LEVEL WASTE
- 2.2.3.1 Disposal of Low-Activity Waste
- 2.2.3.2 Disposal of Intermediate-Activity Waste
- 2.2.3.3 Storage of Long-Lived Waste
- 2.2.3.4 Storage of Naval Hardware Waste
- 2.2.4 HAZARDOUS WASTE
- 2.2.5 MIXED WASTE
- 2.2.5.1 Containerized Storage
- 2.2.5.2 Treatment and Tank Storage
- 2.2.5.3 Disposal
- 2.2.6 TRANSURANIC AND ALPHA WASTE
- 2.2.6.1 Storage
- 2.2.6.2 Disposal
- 2.2.7 SUMMARY OF THE NO-ACTION ALTERNATIVE FOR ALL WASTE TYPES
- 2.2.7.1 Storage
- 2.2.7.2 Treatment
- 2.2.7.3 Disposal
- 2.3 Screening and Selecting Waste Management Technologies
- 2.3.1 SCREENING PROCESS FOR LOW-LEVEL AND TRANSURANIC WASTE
- 2.3.1.1 Identification of Possible Technologies
- 2.3.1.2 Selection of Potential and Reasonable Technologies for Low-Level Waste
- 2.3.1.3 Selection of Potential and Reasonable Technologies for Transuranic Waste
- 2.3.2 SCREENING PROCESS FOR MIXED AND HAZARDOUS WASTES
- 2.3.2.1 Options Analysis in the Site Treatment Plan
- 2.3.2.2 Selection of Reasonable Technologies for Mixed and Hazardous Wastes
- 2.3.3 SYSTEM EVALUATION/OPTIMIZATION FOR THE ACTION ALTERNATIVES
- 2.3.4 NEPA ANALYSIS FOR FACILITIES CONSIDERED IN THE SRS WASTE MANAGEMENT eis
- 2.4 Alternative A Limited Treatment Configuration
- 2.4.1 POLLUTION PREVENTION/WASTE MINIMIZATION
- 2.4.1.1 Pollution Prevention/Waste Minimization B Expected Waste Forecast
- 2.4.1.2 Pollution Prevention/Waste Minimization B Minimum and Maximum Waste Forecasts
- 2.4.2 HIGH-LEVEL WASTE B EXPECTED, MINIMUM, AND MAXIMUM FORECAST
- 2.4.3 LOW-LEVEL WASTE
- 2.4.3.1 Low-Level Waste B Expected Waste Forecast
- 2.4.3.2 Low-Level Waste B Minimum and Maximum Waste Forecasts
- 2.4.4 HAZARDOUS WASTE-EXPECTED, MINIMUM, AND MAXIMUM WASTE FORECASTS
- 2.4.5 Mixed Waste
- 2.4.5.1 Mixed Waste B Expected Waste Forecast
- 2.4.5.1.1 Containerized Storage
- 2.4.5.1.2 Treatment and/or Tank Storage
- 2.4.5.1.3 Disposal
- 2.4.5.2 Mixed Waste B Minimum and Maximum Waste Forecasts
- 2.4.6 TRANSURANIC AND ALPHA WASTE
- 2.4.6.1 Transuranic and Alpha Waste B Expected Waste Forecast
- 2.4.6.1.1 Storage
- 2.4.6.1.2 Treatment
- 2.4.6.1.3 Disposal
- 2.4.6.2 Transuranic and Alpha Waste B Minimum Waste Forecast
- 2.4.6.3 Transuranic and Alpha Waste B Maximum Waste Forecast
- 2.4.7 SUMMARY OF ALTERNATIVE A FOR ALL WASTE TYPES

2.5 Alternative C - Extensive Treatment Configuration 2.5.1 POLLUTION PREVENTION/WASTE MINIMIZATION 2.5.1.1 Pollution Prevention/Waste Minimization Expected Waste Forecast 2.5.1.2 Pollution Prevention/Waste Minimization Minimum and Maximum Waste Forecasts 2.5.2 HIGH-LEVEL WASTE EXPECTED, MINIMUM, AND MAXIMUM WASTE FORECASTS 2.5.3 LOW-LEVEL WASTE 2.5.3.1 Low-Level Waste Expected Waste Forecast 2.5.3.2 Low-Level Waste - Minimum and Maximum Waste Forecasts 2.5.4 HAZARDOUS WASTE 2.5.4.1 Hazardous Waste Expected Waste Forecast 2.5.4.2 Hazardous Waste Minimum and Maximum Waste Forecasts 2.5.5 MIXED WASTE 2.5.5.1 Mixed Waste - Expected Waste Forecast 2.5.5.1.1 Containerized Storage 2.5.5.1.2 Treatment and/or Tank Storage 2.5.5.1.3 Disposal 2.5.5.2 Mixed Waste - Minimum and Maximum Waste Forecasts 2.5.6 Transuranic AND ALPHA Waste 2.5.6.1 Transuranic and Alpha Waste - Expected Waste Forecast 2.5.6.1.1 Storage 2.5.6.1.2 Treatment 2.5.6.1.3 Disposal 2.5.6.2 Transuranic and Alpha Waste - Minimum Waste Forecast 2.5.6.3 Transuranic and Alpha Waste - Maximum Waste Forecast 2.5.7 SUMMARY OF ALTERNATIVE C FOR ALL WASTE TYPES 2.6 Alternative B - Moderate Treatment Configuration and DOE's Preferred Alternative 2.6.1 POLLUTION PREVENTION/WASTE MINIMIZATION 2.6.1.1 Pollution Prevention/Waste Minimization - Expected Waste Forecast 2.6.1.2 Pollution Prevention/Waste Minimization - Minimum and Maximum Waste Forecasts 2.6.2 HIGH-LEVEL WASTE - EXPECTED, MINIMUM, AND MAXIMUM WASTE FORECASTS 2.6.3 LOW-LEVEL WASTE 2.6.3.1 Low-Level Waste - Expected Waste Forecast 2.6.3.2 Low-Level Waste - Minimum and Maximum Waste Forecasts 2.6.4 Hazardous Waste 2.6.4.1 Hazardous Waste - Expected Waste Forecast 2.6.4.2 Hazardous Waste - Minimum and Maximum Waste Forecasts 2.6.5 Mixed Waste 2.6.5.1 Mixed Waste - Expected Waste Forecast 2.6.5.1.1 Containerized Storage 2.6.5.1.2 Treatment and/or Tank Storage 2.6.5.1.3 Disposal 2.6.5.2 Mixed Waste - Minimum and Maximum Waste Forecasts 2.6.6 Transuranic AND ALPHA Waste 2.6.6.1 Transuranic and Alpha Waste - Expected Waste Forecast 2.6.6.1.1 Storage 2.6.6.1.2 Treatment 2.6.6.1.3 Disposal 2.6.6.2 Transuranic and Alpha Waste - Minimum Waste Forecast 2.6.6.3 Transuranic and Alpha Waste - Maximum Waste Forecast 2.6.7 Summary of Alternative B for All Waste Types 2.7 Comparison of Environmental Impacts

CHAPTER 3. AFFECTED ENVIRONMENT

3.1 Introduction

2.8 References

- 3.2 Geologic Resources
- 3.2.1 SOILS AND TOPOGRAPHY
- 3.2.2 Geologic Structures
- 3.2.3 SeisMICITY
- 3.3 Groundwater
- 3.3.1 Aquifer Units
- 3.3.2 GROUNDWATER FLOW
- 3.3.3 GROUNDWATER QUALITY
- 3.3.4 GROUNDWATER USE
- 3.4 Surface Water

- 3.4.1 SAVANNAH RIVER
- 3.4.2 SRS STReaMS
- 3.5 Air Resources
- 3.5.1 CLIMATE AND METEOROLOGY
- 3.5.1.1 Occurrence of Violent Weather
- 3.5.1.2 Wind Speed and Direction
- 3.5.1.3 Atmospheric Stability
- 3.5.2 EXISTING RADIOLOGICAL CONDITIONS
- 3.5.2.1 Background and Baseline Radiological Conditions
- 3.5.2.2 Sources of Radiological Emissions
- 3.5.3 NONRADIOLOGICAL CONDITIONS
- 3.5.3.1 Background Air Quality
- 3.5.3.2 Air Pollutant Source Emissions
- 3.5.3.3 Ambient Air Monitoring
- 3.5.3.4 Atmospheric Dispersion Modeling
- 3.5.3.5 Summary of Nonradiological Air Quality
- 3.6 Ecological Resources
- 3.6.1 Terrestrial Ecology
- 3.6.2 WETLANDS
- 3.6.3 Aquatic Ecology
- 3.6.4 Threatened and Endangered Species
- 3.7 Land Use
- 3.8 Socioeconomics
- 3.8.1 Employment
- 3.8.2 Income
- 3.8.3 POPULATION
- 3.8.4 COMMUNITY INFRASTRUCTURE AND SERVICES
- 3.8.5 DEMOGRAPHIC CHARACTERISTICS
- 3.9 Cultural Resources
- 3.9.1 ARCHAEOLOGICAL SITES AND HISTORIC STRUCTURES
- 3.9.2 Native American Cultural Resources and Concerns
- 3.10 Aesthetics and Scenic Resources
- 3.11 Traffic and Transportation
- 3.11.1 REGIONAL INFRASTRUCTURE
- 3.11.2 SRS TRANSPORTATION INFRASTRUCTURE
- 3.11.2.1 SRS Roads
- 3.11.2.2 SRS Railroads
- 3.11.3 noise
- 3.12 Occupational and Public Radiological Health and Safety
- 3.12.1 PUBLIC RADIOLOGICAL HeaLTH
- 3.12.1.1 Sources of Environmental Radiation
- 3.12.1.2 Radiation Levels in the Vicinity of SRS
- 3.12.1.3 Radiation Levels in E-, F-, H-, N-, S-, and Z-Areas
- 3.12.2 WORKER RADIATION EXPOSURE
- 3.12.2.1 Sources of Radiation Exposure to Workers at SRS
- 3.12.2.2 Radiation Protection Regulations and Guidelines
- 3.12.2.3 SRS Worker Dose
- 3.12.2.4 Worker Risk
- 3.12.3 WORKER NONRADIOLOGICAL SAFETY AND HeaLTH
- 3.13 Waste and Materials
- 3.13.1 Low-Level Radioactive Waste
- 3.13.2 LIQUID HIGH-LEVEL RADIOACTIVE WASTE
- 3.13.3 Transuranic Waste
- 3.13.4 Hazardous Waste
- 3.13.5 Mixed Waste
- 3.13.6 Hazardous Materials
- 3.14 Decontamination and Decommissioning
- 3.14.1 Decontamination and Decommissioning Programs
- 3.14.1.1 Asbestos Abatement Program
- 3.14.1.2 Decommissioning Program for Higher-Risk Facilities
- 3.14.1.3 Decommissioning Program for Nuclear Reactor Facilities
- 3.14.1.4 Decommissioning Program for High-Level Waste Storage Tanks 3.14.1.5 Decommissioning Program for Separations Facilities
- 3.14.1.6 Decommissioning Program for Waste Handling Facilities
- 3.14.1.7 Decommissioning Program for Miscellaneous Facilities
- 3.14.2 Decontamination and Decommissioning Waste Generation
- 3.15 Environmental Restoration
- 3.15.1 Surface and Groundwater Quality

- 3.15.2 Hazardous and Mixed Waste Sites
- 3.15.2.1 Acid/Caustic Basins
- 3.15.2.2 Burning/Rubble Pits
- 3.15.2.3 Coal Pile Runoff Containment Basins
- 3.15.2.4 Disassembly Basins
- 3.15.2.5 Reactor Seepage Basins
- 3.15.2.6 Sewage Sludge Application Sites
- 3.15.3 Burial Ground Complex
- 3.16 References

CHAPTER 4. ENVIRONMENTAL CONSEQUENCES

- 4.1 No Action
- 4.1.1 Introduction
- 4.1.2 GEOLOGIC RESOURCES
- 4.1.3 GROUNDWATER RESOURCES
- 4.1.4 SURFACE WATER RESCOURCES
- 4.1.5 AIR RESOURCES
- 4.1.5.1 Construction
- 4.1.5.2 Operations
- 4.1.5.2.1 Nonradiological Air Emissions Impacts
- 4.1.5.2.2 Radiological Air Emissions Impacts
- 4.1.6 ECOLOGICAL RESOURCES
- **4.1.7 LAND USE**
- 4.1.8 SOCIOECONOMICS
- 4.1.8.1 Construction
- 4.1.8.2 Operations
- 4.1.9 CULTURAL RESOURCES
- 4.1.10 AESTHETICS AMD SCIENCE RESOURCES
- 4.1.11 TRAFFIC AND TRANSPORTATION
- 4.1.11.1 Traffic
- 4.1.11.2 Transportation
- 4.1.11.2.1 Incident-Free Radiological Impacts
- 4.1.11.2.2 Radiological Transportation Accident Impacts
- 4.1.11.2.3 Nonradiological Transportation Accident Impacts
- 4.1.11.3 Noise
- 4.1.12 OCCUPATIONAL AND PUBLIC HeaLTH
- 4.1.12.1 Occupational Health and Safety
- 4.1.12.1.1 Radiological Impacts
- 4.1.12.1.2 Nonradiological Impacts
- 4.1.12.1.3 Noise
- 4.1.12.2 Public Health and Safety
- 4.1.12.2.1 Radiological Impacts
- 4.1.12.2.2 Nonradiological Impacts
- 4.1.12.2.3 Environmental Justice Assessment
- 4.1.13 FACILITY ACCIDENTS
- 4.1.13.1 Methodology
- 4.1.13.2 Summary of Accident Impacts
- 4.2 Alternative A Limited Treatment Configuration
- 4.2.1 INTRODUCTION
- 4.2.2 GEOLOGIC RESOURCES
- 4.2.2.1 Geologic Resources Expected Waste Forecast
- 4.2.2.2 Geologic Resources Minimum Waste Forecast
- 4.2.2.3 Geologic Resources Maximum Waste Forecast
- 4.2.3 GROUNDWATER RESOURCES
- 4.2.3.1 Groundwater Resources Expected Waste Forecast
- 4.2.3.2 Groundwater Resources Minimum Waste Forecast
- 4.2.3.3 Groundwater Resources Maximum Waste Forecast
- 4.2.4 SURFACE WATER RESOURCES
- 4.2.4.1 Surface Water Resources Expected Waste Forecast
- 4.2.4.2 Surface Water Resources Minimum Waste Forecast
- 4.2.4.3 Surface Water Resources Maximum Waste Forecast
- 4.2.5 AIR RESOURCES
- 4.2.5.1 Air Resources Expected Waste Forecast
- 4.2.5.1.1 Construction
- 4.2.5.1.2 Operations

```
4.2.5.2 Air Resources - Minimum Waste Forecast
4.2.5.2.1 Construction
4.2.5.2.2 Operations
4.2.5.3 Air Resources - Maximum Waste Forecast
4.2.5.3.1 Construction
4.2.5.3.2 Operations
4.2.6 ECOLOGICAL RESOURCES
4.2.6.1 Ecological Resources - Expected Waste Forecast
4.2.6.2 Ecological Resources - Minimum Waste Forecast
4.2.6.3 Ecological Resources - Maximum Waste Forecast
4.2.7 LAND USE
4.2.7.1 Land Use - Expected Waste Forecast
4.2.7.2 Land Use - Minimum Waste Forecast
4.2.7.3 Land Use - Maximum Waste Forecast
4.2.8 SOCIOECONOMICS
4.2.8.1 Socioeconomics - Expected Waste Forecast
4.2.8.1.1 Construction
4.2.8.1.2 Operations
4.2.8.2 Socioeconomics - Minimum Waste Forecast
4.2.8.2.1 Construction
4.2.8.2.2 Operations
4.2.8.3 Socioeconomics - Maximum Waste Forecast
4.2.8.3.1 Construction
4.2.8.3.2 Operations
4.2.9 CULTURAL RESOURCES
4.2.9.1 Cultural Resources - Expected Waste Forecast
4.2.9.2 Cultural Resources - Minimum Waste Forecast
4.2.9.3 Cultural Resources - Maximum Waste Forecast
4.2.10 AESTHETICS AND SCENIC RESOURCES - EXPECTED, MINIMUM, AND MAXIMUM WASTE
FORECASTS
4.2.11 TRAFFIC AND TRANSPORTATION
4.2.11.1 Traffic
4.2.11.1.1 Traffic - Expected Waste Forecast
4.2.11.1.2 Traffic - Minimum Waste Forecast
4.2.11.1.3 Traffic - Maximum Waste Forecast
4.2.11.2 Transportation
4.2.11.2.1 Transportation - Expected Waste Forecast
4.2.11.2.2 Transportation - Minimum Waste Forecast
4.2.11.2.3 Transportation - Maximum Waste Forecast
4.2.12 OCCUPATIONAL AND PUBLIC HeaLTH
4.2.12.1 Occupational and Public Health - Expected Waste Forecast
4.2.12.1.1 Occupational Health and Safety
4.2.12.1.2 Public Health and Safety
4.2.12.1.3 Environmental Justice Assessment
4.2.12.2 Occupational and Public Health - Minimum Waste Forecast
4.2.12.2.1 Occupational Health and Safety
4.2.12.2.2 Public Health and Safety
4.2.12.2.3 Environmental Justice Assessment
4.2.12.3 Occupational and Public Health - Maximum Waste Forecast
4.2.12.3.1 Occupational Health and Safety
4.2.12.3.2 Public Health and Safety
4.2.12.3.3 Environmental Justice Assessment
4.2.13 FACILITY ACCIDENTS
4.2.13.1 Facility Accidents- Expected Waste Forecast
4.2.13.2 Facility Accidents- Minimum Waste Forecast
4.2.13.3 Facility Accidents- Maximum Waste Forecast
4.3 Alternative C - Extensive Treatment Configuration
4.3.1 INTRODUCTION
4.3.2 GEOLOGIC RESOURCES
4.3.2.1 Geologic Resources - Expected Waste Forecast
4.3.2.2 Geologic Resources - Minimum Waste Forecast
4.3.2.3 Geologic Resources - Maximum Waste Forecast
4.3.3 GROUNDWATER RESOURCES
4.3.3.1 Groundwater Resources - Expected Waste Forecast
4.3.3.2 Groundwater Resources - Minimum Waste Forecast
4.3.3.3 Groundwater Resources - Maximum Waste Forecast
4.3.4 SURFACE WATER RESOURCES
```

4.3.4.1 Surface Water - Expected Waste Forecast

```
4.3.4.2 Surface Water - Minimum Waste Forecast
4.3.4.3 Surface Water - Maximum Waste Forecast
4.3.5 AIR RESOURCES
4.3.5.1 Air Resources - Expected Waste Forecast
4.3.5.1.1 Construction
4.3.5.1.2 Operations
4.3.5.2 Air Resources - Minimum Waste Forecast
4.3.5.2.1 Construction
4.3.5.2.2 Operations
4.3.5.3 Air Resources - Maximum Waste Forecast
4.3.5.3.1 Construction
4.3.5.3.2 Operations
4.3.6 ECOLOGICAL RESOURCES
4.3.6.1 Ecological Resources - Expected Waste Forecast
4.3.6.2 Ecological Resources - Minimum Waste Forecast
4.3.6.3 Ecological Resources - Maximum Waste Forecast
4.3.7 LAND USE
4.3.7.1 Land Use - Expected Waste Forecast
4.3.7.2 Land Use - Minimum Waste Forecast
4.3.7.3 Land Use - Maximum Waste Forecast
4.3.8 SOCIOECONOMICS
4.3.8.1 Socioeconomics- Expected Waste Forecast
4.3.8.1.1 Construction
4.3.8.1.2 Operations
4.3.8.2 Socioeconomics- Minimum Waste Forecast
4.3.8.2.1 Construction
4.3.8.2.2 Operations
4.3.8.3 Socioeconomics- Maximum Waste Forecast
4.3.8.3.1 Construction
4.3.8.3.2 Operations
4.3.9 CULTURAL RESOURCES
4.3.9.1 Cultural Resources - Expected Waste Forecast
4.3.9.2 Cultural Resources - Minimum Waste Forecast
4.3.9.3 Cultural Resources - Maximum Waste Forecast
4.3.10 AESTHETICS AND SCENIC RESOURCES - EXPECTED, MINIMUM, AND MAXIMUM WASTE
FORECASTS
4.3.11 TRAFFIC AND TRANSPORTATION
4.3.11.1 Traffic
4.3.11.1.1 Traffic - Expected Waste Forecast
4.3.11.1.2 Traffic - Minimum Waste Forecast
4.3.11.1.3 Traffic - Maximum Waste Forecast
4.3.11.2 Transportation
4.3.11.2.1 Transportation - Expected Waste Forecast
4.3.11.2.2 Transportation - Minimum Waste Forecast 4.3.11.2.3 Transportation - Maximum Waste Forecast
4.3.12 OCCUPATIONAL AND PUBLIC HeaLTH
4.3.12.1 Occupational and Public Health - Expected Waste Forecast
4.3.12.1.1 Occupational Health And Safety
4.3.12.1.2 Public Health and Safety
4.3.12.1.3 Environmental Justice Assessment
4.3.12.2 Occupational and Public Health - Minimum Waste Forecast
4.3.12.2.1 Occupational Health and Safety
4.3.12.2.2 Public Health and Safety
4.3.12.2.3 Environmental Justice Assessment
4.3.12.3 Occupational and Public Health - Maximum Waste Forecast
4.3.12.3.1 Occupational Health and Safety
4.3.12.3.2 Public Health and Safety
4.3.12.3.3 Environmental Justice Assessment
4.3.13 FACILITY ACCIDENTS
4.3.13.1 Facility Accidents - Expected Waste Forecast
4.3.13.2 Facility Accidents - Minimum Waste Forecast
4.3.13.3 Facility Accidents - Maximum Waste Forecast
4.4 Alternative B - Moderate Treatment Configuration and DOE's Preferred Treatment Alternative
4.4.1 INTRODUCTION
4.4.2 GEOLOGIC RESOURCES
4.4.2.1 Geologic Resources - Expected Waste Forecast
4.4.2.2 Geologic Resources - Minimum Waste Forecast
4.4.2.3 Geologic Resources - Maximum Waste Forecast
```

```
4.4.3 GROUNDWATER RESOURCES
4.4.3.1 Groundwater Resources - Expected Waste Forecast
4.4.3.2 Groundwater Resources - Minimum Waste Forecast
4.4.3.3 Groundwater Resources - Maximum Waste Forecast
4.4.4 SURFACE WATER RESOURCES
4.4.4.1 Surface Water - Expected Waste Forecast
4.4.4.2 Surface Water - Minimum Waste Forecast
4.4.4.3 Surface Water - Maximum Waste Forecast
4.4.5 AIR RESOURCES
4.4.5.1 Air Resources - Expected Waste Forecast
4.4.5.1.1 Construction
4.4.5.1.2 Operations
4.4.5.2 Air Resources - Minimum Waste Forecast
4.4.5.2.1 Construction
4.4.5.2.2 Operations
4.4.5.3 Air Resources - Maximum Waste Forecast
4.4.5.3.1 Construction
4.4.5.3.2 Operations
4.4.6 ECOLOGICAL RESOURCES
4.4.6.1 Ecological Resources - Expected Waste Forecast
4.4.6.2 Ecological Resources - Minimum Waste Forecast
4.4.6.3 Ecological Resources - Maximum Waste Forecast
4.4.7 LAND USE
4.4.7.1 Land Use - Expected Waste Forecast
4.4.7.2 Land Use - Minimum Waste Forecast
4.4.7.3 Land Use - Maximum Waste Forecast
4.4.8 SOCIOECONOMICS
4.4.8.1 Socioeconomics - Expected Waste Forecast
4.4.8.1.1 Construction
4.4.8.1.2 Operations
4.4.8.2 Socioeconomics - Minimum Waste Forecast
4.4.8.2.1 Construction
4.4.8.2.2 Operations
4.4.8.3 Socioeconomics - Maximum Waste Forecast
4.4.8.3.1 Construction
4.4.8.3.2 Operations
4.4.9 CULTURAL RESOURCES
4.4.9.1 Cultural Resources - Expected Waste Forecast
4.4.9.2 Cultural Resources - Minimum Waste Forecast
4.4.9.3 Cultural Resources - Maximum Waste Forecast
4.4.10 AESTHETICS AND SCENIC RESOURCES - EXPECTED, MINIMUM, AND MAXIMUM WASTE
FORECASTS
4.4.11 TRAFFIC AND TRANSPORTATION
4.4.11.1 Traffic
4.4.11.1.1 Traffic - Expected Waste Forecast
4.4.11.1.2 Traffic - Minimum Waste Forecast
4.4.11.1.3 Traffic - Maximum Waste Forecast
4.4.11.2 Transportation
4.4.11.2.1 Transportation - Expected Waste Forecast
4.4.11.2.2 Transportation - Minimum Waste Forecast
4.4.11.2.3 Transportation - Maximum Waste Forecast
4.4.12 OCCUPATIONAL AND PUBLIC HeaLTH
4.4.12.1 Occupational and Public Health - Expected Waste Forecast
4.4.12.1.1 Occupational Health and Safety
4.4.12.1.2 Public Health and Safety
4.4.12.1.3 Environmental Justice Assessment
4.4.12.2 Occupational and Public Health - Minimum Waste Forecast
4.4.12.2.1 Occupational Health and Safety
4.4.12.2.2 Public Health and Safety
4.4.12.2.3 Environmental Justice Assessment
4.4.12.3 Occupational and Public Health - Maximum Waste Forecast
4.4.12.3.1 Occupational Health and Safety
4.4.12.3.2 Public Health and Safety
4.4.12.3.3 Environmental Justice Assessment
4.4.13 FACILITY ACCIDENTS
4.4.13.1 Facility Accidents - Expected Waste Forecast
4.4.13.2 Facility Accidents - Minimum Waste Forecast
4.4.13.3 Facility Accidents - Maximum Waste Forecast
```

4.4.14 UNAVOIDABLE ADVERSE IMPACTS AND IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES UNDER ALTERNATIVE B 4.4.14.1 Unavoidable Adverse Impacts 4.4.14.1.1 Expected Waste Forecast 4.4.14.1.2 Minimum Waste Forecast 4.4.14.1.3 Maximum Waste Forecast 4.4.14.2 Irreversible or Irretrievable Commitment of Resources 4.4.14.2.1 Expected Waste Forecast 4.4.14.2.2 Minimum Waste Forecast 4.4.14.2.3 Maximum Waste Forecast 4.4.15 CUMULATIVE IMPACTS RESULTING FROM ALTERNATIVEB 4.4.15.1 Existing Facilities 4.4.15.1.1 Savannah River - Technology Center 4.4.15.1.2 F- and H-Area Separations Facilities 4.4.15.1.3 Reactors 4.4.15.1.4 Replacement Tritium Facility 4.4.15.1.5 F/H-Area Effluent Treatment Facility 4.4.15.1.6 Offsite Facilities 4.4.15.2 New and Proposed Facilities or Programs 4.4.15.2.1 Defense Waste Processing Facility 4.4.15.2.2 F-Canyon Plutonium Solutions 4.4.15.2.3 Interim Management of Nuclear Materials 4.4.15.2.4 Programmatic Spent Nuclear Fuel Management and Idaho National Engineering Laboratory **Environmental Restoration and Waste Management Programs** 4.4.15.3 Moderate Treatment Configuration Alternative 4.4.15.4 Cumulative Impacts 4.4.15.4.1 Groundwater Resources 4.4.15.4.2 Surface Water Resources 4.15.4.3 Air Resources 4.4.15.4.4 Land Use 4.4.15.4.5 Socioeconomics 4.4.15.4.6 Transportation 4.4.15.4.7 Occupational and Public Health

CHAPTER 5. FEDERAL AND STATE LAWS, CONSULTATIONS, AND REQUIREMENTS

4.5 Environmental Restoration and Decontamination and Decommissioning

```
5.1 No-Action Alternative
5.1.1 NATIONAL ENVIRONMENTAL POLICY ACT
5.1.2 ATOMIC ENERGY ACT
5.1.3 COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT
5.1.4 EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT
5.1.5 RESOURCE CONSERVATION AND RECOVERY ACT
5.1.6 FEDERAL FACILITY COMPLIANCE ACT
5.1.7 CLeaN WATER ACT
5.1.8 SAFE DRINKING WATER ACT
5.1.9 CLeaN AIR ACT
5.1.10 ENDANGERED SPECIES ACT AND OTHER STATUTES
5.1.11 EXECUTIVE ORDERS 11990 AND 11988
5.1.12 EXECUTIVE ORDER 12898
5.1.13 CULTURAL RESOURCES
5.2 Other Alternatives
5.2.1 EXPECTED WASTE FORECAST
5.2.2 MINIMUM WASTE FORECAST
5.2.3 MAXIMUM WASTE FORECAST
5.3 References
```

LIST OF PREPARERS

4.6 Mitigation Measures4.7 References

ACRONYMS, ABBREVIATIONS, USE OF SCIENTIFIC NOTATION, AND EXPLANATION OF NUMBER CONVERSIONS

GLOSSARY

DISTRIBUTION LIST

- A. UNITED STATES CONGRESS
- A.1 Senators from Affected and Adjoining States
- A.2 United States Senate Committees
- A.3 Representatives from Affected and Adjoining States
- B. FEDERAL AGENCIES
- C. STATE OF SOUTH CAROLINA
- C.1 State Offices and Legislature
- C.2 State and Local Agencies and Officials
- D. STATE OF GEORGIA
- D.1 State Offices and Legislature
- D.2 State and Local Agencies and Officials
- E. STATE OF TENNESSEE
- F. STATE SINGLE POINTS OF CONTACT
- G. NATIVE AMERICAN GROUPS
- H. CITIZENS ADVISORY BOARD MEMBERS
- I. ENVIRONMENTAL AND PUBLIC INTEREST GROUPS
- I.1 National
- I.2 State and Local
- J. OTHER GROUPS AND INDIVIDUALS
- K. ReaDING ROOMS

APPENDIX A WASTE FORECASTS

References

APPENDIX B FACILITY DESCRIPTIONS

- **B.1 ALPHA VITRIFICATION FACILITY**
- B.2 AQUEOUS AND ORGANIC WASTE STORAGE TANKS
- **B.3 BURIAL GROUND SOLVENT TANKS**
- **B.4 COMPACTORS**
- **B.5 CONSOLIDATED INCINERATION FACILITY**
- B.6 CONTAINMENT BUILDING (HAZARDOUS WASTE/MIXED WASTE TREATMENT BUILDING)
- **B.7 DEFENSE WASTE PROCESSING FACILITY**
- **B.8 E-ARea VAULTS**
- B.9 EXPERIMENTAL TRANSURANIC WASTE ASSAY FACILITY/ WASTE CERTIFICATION FACILITY
- B.10 F/H-ARea EFFLUENT TReaTMENT FACILITY
- B.11 HAZARDOUS WASTE/MIXED WASTE DISPOSAL VAULTS
- **B.12 HAZARDOUS WASTE STORAGE FACILITIES**
- **B.13 HIGH-LEVEL WASTE TANK FARMS**
- B.14 M-ARea AIR STRIPPER
- B.15 M-ARea VENDOR TReaTMENT FACILITY
- **B.16 MIXED WASTE STORAGE FACILITIES**
- B.17 NEW WASTE TRANSFER FACILITY NEW WASTE TRANSFER FACILITY
- **B.18 NON-ALPHA VITRIFICATION FACILITY**
- **B.19 LOW-LEVEL WASTE SMELTER**
- B.20 OFFSITE LOW-LEVEL WASTE VOLUME REDUCTION
- **B.21 OFFSITE MIXED WASTE TReaTMENTS**
- **B.22 ORGANIC WASTE STORAGE TANK**
- B.23 PROCESS WASTE INTERIM TREATMENT/STORAGE FACILITY
- **B.24 RECYCLING UNITS**
- **B.25 REPLACEMENT HIGH-LEVEL WASTE EVAPORATOR**
- B.26 SAVANNAH RIVER TECHNOLOGY CENTER
- B.27 SHALLOW LAND DISPOSAL
- B.28 SOIL SORT FACILITY
- **B.29 SUPERCOMPACTOR**
- **B.30 TRANSURANIC WASTE STORAGE PADS**
- B.31 TRANSURANIC WASTE CHARACTERIZATION/ CERTIFICATION FACILITY
- **B.32 References**

Advertise with Us | About Us | GlobalSecurity.org In the News | Internships | Site Map | Privacy

Copyright © 2000-2007 GlobalSecurity.org All rights reserved.

APPENDIX C LIFE-CYCLE TREATMENT, STORAGE, AND DISPOSAL FACILITY COSTS

C.1 Cost Methodology

- C.1.1 RELATIONSHIP TO SRS DRAFT SITE TREATMENT PLAN COST METHODOLOGY
- C.1.2 APPLICATION OF COST METHODOLOGY FOR OPTIONS SELECTION
- C.1.3 APPLICATION OF COST METHODOLOGY FOR ALTERNATIVE TREATMENT, STORAGE, AND DISPOSAL SCENARIOS
- C.1.4 SPECIAL CONSIDERATIONS FOR COST CALCULATIONS
- C.2 Typical Cost Estimate
- C.2.1 TOTAL FACILITY COST
- C.2.1.1 Assumptions
- C.2.1.2 Construction Costs
- C.2.1.3 Total Estimated Cost (TEC)
- C.2.1.4 Pre-Project Costs
- C.2.1.5 Facility Operating Costs
- C.2.1.7 Total Unescalated Costs
- C.2.2 COST DISTRIBUTION
- C.2.3 ESCALATION
- C.2.4 DISCOUNTING
- C.3 Cost of Facilities
- C.4 References

APPENDIX D INNOVATIVE AND EMERGING WASTE MANAGEMENT TREATMENT TECHNOLOGIES

SUMMARY

- D.1 Background
- D.2 Introduction
- D.3 Biological Treatment Technologies
- D.3.1 BIOSCRUBBER
- D.3.2 BIOSORPTION
- D.3.3 WHITE ROT FUNGUS
- D.4 Chemical Treatment Technology
- D.4.1 AQUEOUS-PHASE CATALYTIC EXCHANGE FOR DETRITIATION OF WATER
- D.4.2 BIOLOGICAL/CHEMICAL TReaTMENT
- **D.4.3 DECHLORINATION**
- D.4.4 GAS-PHASE CHEMICAL REDUCTION
- D.4.5 NITRATE TO AMMONIA AND CERAMIC PROCESS
- D.4.6 RESORCINOL-FORMALDEHYDE ION EXCHANGE RESIN
- D.4.7 SUPERCRITICAL WATER OXIDATION
- D.4.8 WET AIR OXIDATION
- D.4.9 WET CHEMICAL OXIDATION (ACID DIGESTION)
- D.4.10 EVAPORATION AND CATALYTIC OXIDATION
- D.4.11 BIOCATALYTIC DESTRUCTION
- D.4.12 ELECTROCHEMICAL OXIDATION
- D.4.13 MEDIATED ELECTROCHEMICAL OXIDATION
- D.5 Physical Treatment Technologies
- D.5.1 ACOUSTIC BARRIER PARTICULATE SEPARATOR
- D.5.2 CHEMICAL BINDING/PRECIPITATION/PHYSICAL SEPARATION OF RADIONUCLIDES
- D.5.3 CHEMICAL TREATMENT AND ULTRAFILTRATION
- D.5.4 HeaVY METALS AND RADIONUCLIDE POLISHING FILTER
- **D.5.5 MEMBRANE MICROFILTRATION**
- D.5.6 ELECTRODIALYSIS
- D.5.7 FREEZE CRYSTALLIZATION
- D.5.8 HIGH-ENERGY ELECTRON IRRADIATION
- **D.5.9 ULTRAVIOLET OXIDATION**
- D.5.10 PRESSURE WASHING AND HYDRAULIC JETTING
- D.5.11 SOIL-WASHING
- D.5.12 STeaM REFORMING
- D.6 Stabilization Technologies
- D.6.1 POLYETHYLENE ENCAPSULATION
- D.6.2 POZZOLANIC SOLIDIFICATION AND STABILIZATION
- D.6.3 VINYL ESTER STYRENE SOLIDIFICATION
- D.7 Thermal Treatment Technologies
- D.7.1 FLAME ReaCTOR

- D.7.2 THERMAL DESORPTION PROCESS
- D.7.3 UNVENTED THERMAL PROCESS
- D.7.4 MOLTEN SALT OXIDATION AND DESTRUCTION PROCESS
- D.7.5 QUANTUM-CATALYTIC EXTRACTION PROCESS
- D.7.6 INFRARED THERMAL DESTRUCTION
- D.7.7 PLASMA HeaRTH PROCESS
- D.7.8 PLASMA ARC CENTRIFUGAL TReaTMENT
- D.7.9 GRAPHITE ELECTRODE DC ARC FURNACE
- D.7.10 PACKED BED ReaCTOR/SILENT DISCHARGE PLASMA APPARATUS
- D.7.11 ELECTRIC MELTER VITRIFICATION
- D.7.12 STIRRED MELTER VITRIFICATION
- D.7.13 MODULAR VITRIFICATION
- D.7.14 VORTEC PROCESS
- D.7.15 IN SITU SOIL VITRIFICATION
- D.7.16 ReaCTIVE ADDITIVE STABILIZATION PROCESS
- D.7.17 CYCLONIC FURNACE
- D.7.18 FLUIDIZED BED CYCLONIC AGGLOMERATING INCINERATOR
- D.7.19 CATALYTIC COMBUSTION IN A FLUIDIZED BED ReaCTOR
- D.7.20 MICROWAVE SOLIDIFICATION
- D.7.21 MIXED WASTE TReaTMENT PROCESS
- D.8 References

APPENDIX E SUPPLEMENTAL DATA

- **SECTION 1**
- **SECTION 2**
- **SECTION 3**
- **SECTION 4**
- SECTION 5
- 6.0 REFERENCES

APPENDIX F ACCIDENT ANALYSIS

- F.1 Introduction
- F.2 General Accident Information
- F.3 Historic Perspective
- F.4 Accident Analysis Methodology
- F.4.1 RADIOLOGICAL ACCIDENT ANALYSIS METHODOLOGY
- F.4.2 CHEMICAL HAZARDS ANALYSIS METHODOLOGY
- F.5 Accident Analysis by Waste Type
- F.5.1 HIGH-LEVEL WASTE
- F.5.1.1 Facilities and Accidents: High-Level Waste
- F.5.1.2 Accident Analysis for the High-Level Waste No-Action Alternative
- F.5.1.3 Accident Analysis for the High-Level Waste for Minimum, Expected, and Maximum Waste Forecasts
- F.5.1.4 Impacts to Involved Workers from Accidents Involving High-Level Waste
- F.5.1.5 Impacts from High-Level Waste Chemical Accidents
- F.5.2 LOW-LEVEL WASTE
- F.5.2.1 Facilities and Accidents: Low-Level Waste
- F.5.2.2 Accident Analysis for the Low-Level Waste No-Action Alternative
- F.5.2.3 Accident Analysis for the Low-Level Waste Under Alternative B
- F.5.2.3.1 Impacts from Postulated Radiological Accidents
- F.5.2.3.2 Impacts from New or Proposed Facilities
- F.5.2.4 Accident Analysis for Low-Level Waste Under Alternative A
- F.5.2.5 Accident Analysis for Low-Level Waste Under Alternative C
- F.5.2.6 Impacts to Involved Workers from Accidents Involving Low-Level Waste
- F.5.2.7 Impacts from Low-Level Waste Chemical Accidents
- F.5.3 HAZARDOUS WASTE
- F.5.4 MIXED WASTE
- F.5.4.1 Facilities and Accidents: Mixed Waste
- F.5.4.2 Accident Analysis for the Mixed Waste No-Action Alternative
- F.5.4.2.1 Impacts from Postulated Radiological Accidents
- F.5.4.2.2 Impacts from New or Proposed Facilities
- F.5.4.3 Accident Analysis for the Mixed Waste Under Alternative B
- F.5.4.3.1 Impacts from Postulated Radiological Accidents
- F.5.4.3.2 Impacts from New or Proposed Facilities

- F.5.4.4 Accident Analysis for Mixed Waste Under Alternative A
- F.5.4.5 Accident Analysis for Mixed Waste Under Alternative C
- F.5.4.6 Impacts to Involved Workers from Accidents Involving Mixed Waste
- F.5.4.7 Impacts from Mixed Waste Chemical Accidents
- F.5.5 TRANSURANIC AND ALPHA WASTE
- F.5.5.1 Facilities and Accidents: Transuranic and Alpha Waste
- F.5.5.2 Accident Analysis for Transuranic and Alpha Waste No-Action Alternative
- F.5.5.2.1 Impacts from Postulated Radiological Accidents
- F.5.5.2.2 Impacts from New or Proposed Facilities
- F.5.5.3 Accident Analysis for the Transuranic and Alpha Waste Under Alternative B
- F.5.5.3.1 Impacts from Postulated Radiological Accidents
- F.5.5.3.2 Impacts from New or Proposed Facilities
- F.5.5.4 Accident Analysis for Transuranic and Alpha Waste Under Alternative A
- F.5.5.5 Accident Analysis for Transuranic and Alpha Waste Under Alternative C
- F.5.5.6 Impacts to Involved Workers from Accidents Involving Transuranic and Alpha Waste
- F.5.5.7 Impacts from Transuranic and Alpha Waste Chemical Accidents
- F.6 Cumulative Impacts from Postulated Accidents
- F.7 Secondary Impacts from Postulated Accidents
- F.7.1 BIOTIC RESOURCES
- F.7.2 WATER RESOURCES
- F.7.3 ECONOMIC IMPACTS
- F.7.4 NATIONAL DEFENSE
- F.7.5 ENVIRONMENTAL CONTAMINATION
- F.7.6 THReaTENED AND ENDANGERED SPECIES
- F.7.7 LAND USE
- F.7.8 TReaTY RIGHTS
- F.8 Accident Mitigation
- F.9 References

APPENDIX G SRS FEDERAL FACILITY AGREEMENT APPENDIXES

- **G.1** Introduction
- G.2
- G.3
- G.4 Reference

APPENDIX H ALTERNATIVE APPROACHES TO LOW-LEVEL WASTE REGULATION

APPENDIX H. ALTERNATIVE APPROACHES TO LOW-LEVEL WASTE REGULATION

- H.1 DOE and Nuclear Regulatory Commission Technical Regulatory Requirements for LowLevel Radioactive Waste
- H.2 DOE Nuclear Regulatory Commission Requirement Comparisons
- H.2.1 PERFORMANCE OBJECTIVES
- H.2.2 PERFORMANCE ASSESSMENT
- H.2.3 WASTE CHARACTERIZATION AND ACCEPTANCE CRITERIA
- H.2.4 DISPOSAL SITE SELECTION
- H.2.5 FACILITY AND SITE DESIGN
- H.2.6 DISPOSAL FACILITY OPERATION
- H.2.7 DISPOSAL SITE CLOSURE/POST-CLOSURE
- H.2.8 ENVIRONMENTAL MONITORING
- H.3 Nuclear Regulatory Commission DOE Comparison Summary
- H.4 EPA Hazardous Waste Landfill Requirements
- H.5 Reference

APPENDIX I PUBLIC COMMENTS AND DOE RESPONSES

I.1 Introduction

- I.2 Statements Made at the Public Hearings
- Response to Comment NA001-1
- Response to Comment S001-01
- Response to Comment S002-01
- Response to Comment S002-02
- Response to Comment S002-03
- Response to Comment HH001-01

Response to Comment HH002-01

Response to Comment HH002-02

1.3 Correspondence Received from Government Agencies and the Public

Response to Comment L001-01

Response to Comment L001-02

Response to Comment L002-01

Response to Comment L002-02

Response to Comment L003-01

Response to Comment L003-02

Response to Comment L004-01

Response to Comment L004-02

Response to Comment L004-03

Response to Comment L004-03

Response to Comment L004-05

Describe to Comment L004-03

Response to Comment L004-06

Response to Comment L004-07

Response to Comment L004-08

Response to Comment L004-09

Response to Comment L004-10

Response to Comment L004-11

Response to Comment L004-12

Response to Comment L004-13

Response to Comment L004-14

Response to Comment L004-15

Response to Comment L005-01

Response to Comment L005-02

Response to Comment L006-01 Response to Comment L006-02

Response to Comment L006-03

Response to Comment Loop-03

Response to Comment L006-04

Response to Comment L006-05

Response to Comment L007-01 Response to Comment L007-02

Response to Comment L007-02

Response to Comment L007-04

Description of the Comment Loop of

Response to Comment L007-05

Response to Comment L007-06

Response to Comment L007-07 Response to Comment L007-08

Response to Comment L007-09

Response to Comment L007-10

Response to Comment L007-11

Response to Comment L007-12

Response to Comment L007-13 Response to Comment L007-14

Response to Comment L007-15

Despense to Comment L007-16

Response to Comment L007-16

Response to Comment L007-17 Response to Comment L007-18

Response to Comment L007-19

Response to Comment L007-19

Response to Comment L007-21

Response to Comment L007-22

Response to Comment L008-01

Response to Comment L008-02

Response to Comment L008-03

Response to Comment L008-04 Response to Comment L009-01

Response to Comment L009-02

Response to Comment L010-01

Response to Comment L010-02

Response to Comment L010-03

Response to Comment L010-04

Response to Comment L010-05

Response to Comment L010-06 Response to Comment L010-07

Response to Comment L010-08

Response to Comment L010-09

I.4 References

APPENDIX J PROTECTED SPECIES SURVEY

INTRODUCTION

DESCRIPTION OF PROPOSED PROJECT
DESCRIPTION OF PROJECT AND SURROUNDING AREA
PROTECTED SPECIES REVIEWED
SURVEY RESULTS
IMPACT IDENTIFICATION
MITIGATION PLANS
SUMMARY
REFERENCES







Site maintained by: John Pike

Page last modified: 28-04-2005 12:12:00 Zulu